

ART. XXXII.—*Observations on the Mokohinou Islands and the Birds which visit them.*

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THE Mokohinou group consists of a number of islands, situated about twelve miles to the north-west of the Great Barrier Island, all of volcanic formation, more or less precipitous, and divided from each other by narrow—rarely deep—channels; the two largest islands being deeply indented and one of them almost bisected by the constant action of the sea. The vegetation of the several islands consists principally of flax (*Phormium tenax*), grasses, fern (*Pteris aquilina*, var. *esculenta*, and *Adiantum ethiopicum*), cyperaceous plants, *Mesembryanthemum*, *Veronica*, *Coprosma*, *Myoporum*, *Metrosideros*, *Pittosporum*, native broom (*Carmichaelia* sp.), and *Olearia* sp., all the last-mentioned being more or less scattered, and, owing to the absence of shelter, stunted. The tuatara lizard is found in abundance on two of the islands, and I have noted the occurrence of six other species, but in no case more than two kinds on any one island. When it is considered that species of insects and plants found on one are often entirely absent from others close adjacent, each island might almost be said to possess a distinct fauna and flora of its own. Out of 130 species of *Coleoptera* collected fully one-third proved new, and have for the greater part been described by Captain Thomas Broun, M.E.S. Amongst other interesting insects found is a trap-door spider that forms a very pretty nest on the bark of a species of *Coprosma*. The young are hatched in the nest, where they remain for a considerable time together with the female. Nest and lid are invariably constructed in such a manner that only the closest scrutiny can distinguish them from the surrounding bark, for if the bark is covered with moss or lichens the nest is made to correspond.

Numerous birds visit the islands annually for breeding or other purposes; and, before proceeding to give a list of these, I will mention that for over a year after the light was first exhibited many sea-birds used to strike the lantern almost every night. This, year after year, has happened less frequently, for whereas formerly dozens of birds might be observed circling round and round the light, in a direction contrary to that in which the apparatus revolved, till at last they became dazzled, it rarely occurs now (after a lapse of close upon six years), if I except two species,

and these only for a short time of the year. This is not because the birds are less abundant than formerly—quite the contrary—but they have to some extent become accustomed to the light, and, though attracted by it, generally succeed in getting above or below the rays instead of circling round on a level with them; the same birds no doubt returning year after year till prevented by death or accident. I cannot otherwise account for their ability to avoid entanglement in the rays, more especially in thick weather. The two species which do strike in any numbers are Cook's petrel and *Thalassidroma fregata*, the former on its way to and from its breeding-place on the Little Barrier, and the latter on emerging from or returning to its burrow in the early part of the night. Cook's petrel is at all times attracted by a light—so much so that on the breeding-ground the birds will come close up to an open fire. In January, 1886, I secured a large *Puffinus* that flew against the lantern, which on examination proved abundantly distinct from any species described in the "Birds of New Zealand." I took down a description of the living bird, and, placing it in strong spirits, forwarded it after a time to Mr. T. F. Cheeseman, F.L.S., for preservation and identification, it being impossible for me to get away from the island; and Mr. Cheeseman subsequently informed me that he had been unable to identify it with any species of which a description was in his possession. I have described the bird below under the name of *Puffinus zealandicus*, and as soon as the specimen is returned to me it will be set up and deposited in one of our museums; but so far, I regret to say, nothing has been done to it.

Circus gouldi.

More or less abundant all the year. Destroys considerable numbers of one of the stormy petrels (*Thalassidroma fregata*) during the breeding-season, sometimes entering the short burrow, or waiting at the hole till the unsuspecting tenant comes to the mouth of it for air: this it has to do frequently, the nest being only a few inches below the surface, which is baked by the midsummer sun. At sunrise during the month of June I have frequently counted as many as thirty at a time coming from the south-east and flying towards the west or west-south-west.

Athene novæ-zealandiæ.

Does not breed here, but visits occasionally.

Haleyon vagans.

Arrives in February and departs in August or September. None breed here.

Prothemadera novæ-zealandiæ.

Visits annually when the *Phormium* is in bloom, and again when the young are able to fly.

Anthornis melanura.

Visits occasionally during the winter. Last season (1888) I saw four.

Zosterops lateralis.

Winters every year in great numbers, which take their departure in August. During calm winter nights many fly against the lantern.

Anthus novæ-zealandiæ.

Common. Breeds on all the islands.

Rhipidura flabellifera.

Visits frequently from Fanal Island, where it breeds.

Platycercus novæ-zealandiæ.

Breeds on the Mokohinou and Fanal Islands. Lays in December. Egg white.

Nestor meridionalis.

Visits occasionally.

Eudynamis taitensis.

Arrives in October. Two wintered here in 1886. I have caught several on the lantern at night.

Chrysococcyx lucidus.

Arrives in October, and stops for a few days. Some fly against the lantern in thick weather.

Charadrius fulvus.

Visits every year in September, but only a few.

Anarhynchus frontalis.

Visits in October, but seldom more than two pairs, and they do not stay long.

Ardea sacra.

One or two visit every year, remaining for several months at a time. There is one here now (August) which I have seen nearly every day since February.

Limosa baueri.

More or less visit every year in October, remaining only for a few days.

Larus dominicanus.

Three or four pairs breed on some of the smaller islets every year. Lays at the end of October, and the young leave the nest in February.

Larus scopulinus.

Numbers breed here on a rock, but, for some reason or other, only every second year. There is no other breeding-place of theirs in the vicinity. When the *Cicada* make their appearance in the early part of summer they are eagerly followed in their short flights by this little gull, which may be seen busily feeding on them during the whole day for a week or two at a stretch, driving them out of the ngaio bushes and following them inland, or out over the water.

Sterna frontalis.

Breeds on the same rock as the preceding, every second year. Lays in October. The young are ready to fly near the middle of January.

Diomedea (sp. ?).

One or two visit the neighbourhood annually, but I have been unable to identify them. The last one I saw was in December, 1888.

Haladroma uinatrix.

Breeds on three of the smaller, comparatively low, islands, where it forms its burrow in the peat-like substance, consisting of light soil and decayed *Mesembryanthemum*, with which they are covered. Burrowing commences in April. In July a nest, consisting of dry flax, sticks, and grass, is formed at the end of the burrow, and a few of the earlier birds begin to lay during the last half of the month, but most of the laying takes place during August. The birds, previous to laying, are rarely found in the burrows during the day, all the work of burrowing, &c., being carried on at night. One egg only is laid in each nest. Colour of egg, white; length, 1.5in.; width, 1.25in.

Puffinus gavius.

This species never strikes the lantern. The young depart, some in the end of December, and the rest in January. Begins to burrow at the same time as the preceding, and does not work at or remain in the burrow during the day, previous to laying. No nesting-material save a few feathers is used, and all the burrows I examined were short, so that the egg could be easily reached without digging. A single egg is deposited in each nest. Colour of egg, white; average size of six eggs now before me—length, 2.31in.; width, 1.61in. Lay-

ing takes place at the beginning of September. Breeds on one island only, and not in great numbers. None have struck the lantern.

Puffinus assimilis.

Not very numerous, though it breeds on all the Moko-hinou Islands. The burrow is generally under a rock, in the interstices between rocks, or less frequently on the level ground below a root or tussock. The nest is at all times difficult to get at—more so than that of any other species which breeds here. Burrowing commences in April and May, and is carried on at night only, so that the birds are rarely found in the burrows during the day, previous to laying. Nesting-material is deposited in the burrow during June and July, and at the end of the latter month laying commences, and extends to the middle of August. A single egg only is deposited in each nest. Colour of egg, white; length, 2·3in.; width, 1·4in. The young in down are greyish-black, excepting a narrow line of white on the throat and breast, which on reaching the abdomen divides into a right and left branch, uniting again behind the vent, thus leaving the abdomen grey. When the young birds depart they can scarce be distinguished from the old. They begin to leave in the end of December, and by the middle of January all have departed. This species very rarely comes against the lantern, and the burrow is seldom higher than 60ft. above the water.

Puffinus tristis.

Between the 3rd December and the 15th January, 1886–87, I found the nests of a species of *Puffinus* which differed somewhat from *P. tristis* as regards colour and measurements, and also in this: that the colour of the egg of the Moko-hinou bird is white. I sent a skin to Mr. T. F. Cheeseman, F.L.S., who informs me that he has compared it with others undoubtedly *P. tristis*, and, allowing for individual peculiarities, finds them identical.

It is a rare bird here, and confines itself to three small patches of ground on different islands, only a few nests being found on each, and these not far apart.

The burrow is from 4ft. to 9ft. in length, and formed in such a way that the nest is between 2ft. and 3ft. under the surface, so that to get at the egg a pick or spade must be employed. This has invariably been the case in all I have examined, no matter whether the burrows were situated on rising or comparatively level ground. Long flax, growing in a deep light soil, is characteristic of the several breeding-places. In two burrows, which I dug out in December, a bird was found in each, sitting on an egg just laid; whilst in six others

I found a pair of birds in each, but no egg, the birds being still engaged sinking their burrow, or bringing in rubbish, of which a large quantity is used, for a nest.

This species bites viciously if the hand is inserted in the burrow after it is partly excavated, and to handle it with any degree of comfort, unless it is at once killed, the long sharp beak must be tied. The stomachs of those I skinned contained a dark-green substance, and several eyeballs (like those from a fish) $\frac{1}{2}$ in. in diameter, also beaks—possibly the remains of cephalopods. Laying-time from beginning of December to middle of January. Colour of egg white, much tapered. Largest egg found: length, 3.31in.; width, 1.91in. Smallest: length, 3in.; width, 1.75in. The young begin to leave in the middle of April, and by the end of May all are gone. It is worthy of note that the breeding-time of this bird differs from that of any other species found here. Both birds, for a month previous to laying, remain in the burrow during the day. None have ever struck the lantern.

Puffinus zealandicus, n. sp.

As previously mentioned, this species was secured by me in January, 1886, when it flew against the lantern, and up to June, 1888, no description of it has been found. The following description was taken from the living bird:—

Top of head (to a little below the eye) greyish-black. A small white spot beneath the lower margin of eye. Wings above, brownish-black; secondaries slightly edged with white. Neck, back, rump, and upper tail-coverts slate-grey. Tail-feathers brownish-black above and below. Chin, throat, lower part of wings, and the whole under-surface white, excepting the feathers on tibia, which are light-grey. Lower part of both mandibles bluish, remainder black. Outer margin of tarsus, and two outer toes, black; remainder pale, with a bluish tinge. Interdigital membrane pale, shaded with black.

Measurements: L., 18in.; W., 12in.; B., 2.15in.; tarsus, 2.11in.

I have sent to Auckland for the specimen, for, so far, I regret to say, nothing has been done to preserve it, and it has been kept in spirits since I first sent it up.

Procellaria parkinsoni.

Does not breed on any of the Mokohinou Islands, and only one example, which struck the lantern some years ago, has come under my notice.

Procellaria cookii.

Does not breed here, but numbers annually strike the lantern during calm, thick nights in October and November,

when they pass to and from their breeding-place on the north-east end of the Little Barrier Island. It is well known to the Maoris living there by the name of "titi," and is, no doubt, so called in reference to its cry. I measured many examples one year, and found that the measurements of different individuals varied considerably, and the colour to a slight degree, and am therefore of the opinion that *P. mollis* and *P. cookii* are identical, the distinction between these, so far as can be judged by descriptions, being principally based on measurements.

Procellaria gouldi.

This is the "oi" of the Barrier Maoris. Great numbers of this bird visit here annually for the purpose of breeding, and the young, when about ready to depart, are secured by the natives, who call with that intention, and boiled down in their own fat for future use. This, I am informed, has been the custom since time immemorial, and the ancestors of the people who now call occupied, at no very remote time, the Mokohinou Islands permanently, many of them being buried in part of the boulder-beach which is still considered *tapu*. This petrel begins to burrow in March, and continues to do so up to the middle of June, when more or less nesting-material is carried in, both birds being invariably found in the burrow during the day from May up to the time of laying. The burrow, which is seldom deep or long, is generally situated amongst the flax, or on the open ground where it is sufficiently soft and free from stones. On the 27th June, 1888, I examined sixteen burrows, and in thirteen of these found a bird, each sitting on a fresh-laid egg; the other three nests contained each two birds, but no egg. No eggs having been found previous to the 24th, it may be assumed that most of the laying occurs during the last week of June. The young, which are greyish-black when in down, begin to leave during the last week of December, and by the 7th of January all but a few stragglers have departed. The young, when handled, often eject their food, which I find to consist of Medusæ and minute shrimps, but I have seen no trace of fish, excepting in December, when eyeballs, like those found in the stomach of *Puffinus tristis*, are sometimes thrown up. In December, 1886, I saw an albino of *P. gouldi*. It was a young bird of a uniform dirty-white colour, and had been found by a Maori, who kept it till I saw it. I am told by the Maoris that they usually find one or two every year amongst the thousands of young birds captured; but the specimen referred to is the only one I have seen. This species used to strike the lantern in great numbers, but rarely does so now. In December, 1888, the natives potted 3,000 young birds, taken off Mokohinou and Fanal Islands.

Prion banksii.

Does not breed here, but three years ago I secured a specimen which struck the lantern.

Thalassidroma melanogaster.

So far as I have been able to discover, this species does not breed here. In 1886 Mr. W. R. Wilson (now at Ponui Lighthouse) caught a specimen which flew against the lantern. It is the only one I have seen.

Thalassidroma fregata.

Confines itself to one of the low islands, where it breeds in considerable numbers, the nests being as close together as the ground will permit. Burrowing begins during August, both birds being engaged in the work, which is carried on during the day for the last month previous to laying. Nesting-material, of which a comparatively large amount is used, is collected during the first half of October; laying begins in the middle of the same month, and is over by the 1st November. The egg, of which one only is deposited in each nest, is white, with more or less reddish specks at the blunt end, or sometimes disposed in a band. The eggs are rather variable in size, and the following measurements were taken from the smallest and largest of many examples: Length, 1.3in.; width, 0.94in.: length, 1.44in.; width, 1.7in. The young in down are greyish-black, but when taking their departure, during the last week of February and first week of March, can scarce be distinguished from the old birds. During thick weather in the breeding-season a great number fly against the lantern or come in at the light-room door.

Dysporus serrator.

Often seen, but does not breed in the vicinity.

Phalacrocorax novæ-hollandiæ.

Common. Does not breed here.

Eudyptula undina.

Breeds on the Mokohinou Islands, but not in great numbers. Examined several burrows in the middle of June, and found two birds in each, burrowing. Again, a month later, and found that the birds had deposited dry rubbish in the burrow. On the 15th August I found several nests with one or two eggs in each, and others again, a fortnight later, also with eggs quite fresh. The young leave in the end of December and first half of January. In dry or stony places little, if any, nesting-material is used unless it is found very close at hand, and any suitable hollow or crevice in the rocks,

out of reach of the sea, is generally taken possession of. On the other hand, nests are occasionally found a couple of hundred feet above the water, but only, I think, when suitable places cannot be found at a lower level. On one occasion I witnessed a fight between this penguin and a *Procellaria gouldi* about a burrow. Leaving them to settle the question, and visiting the spot again a few days later, I found the penguin dead outside the burrow, and the *Procellaria* in possession.

The old burrows are used again year after year, but are invariably renovated and extended, and I am of opinion that the same birds return to the old nest if they were left undisturbed previous to and during the time of incubation. If the eggs are removed, or the old birds disturbed, the burrow is deserted, and generally remains without a tenant for that breeding-season; and this applies to all the petrels mentioned above. The penguin, on the other hand, does not readily leave its nest or burrow, for I have seen the bird laying a third time in the nest from which I had on two previous occasions removed the eggs when the bird was absent. In the case of the petrels, the laying-season varies from a week to a fortnight during different years. A dry winter is followed by early laying, but a wet winter retards the burrowing, and consequently also the laying, for the birds are unable to "back out" the loosened earth if wet. The laying-times given above must therefore be taken as applying to a dry winter and spring.

I am informed that punishment, such as a tap on the head and confiscation of the offender's birds, was in the olden time inflicted by the chief of the hapu then residing on Mokohinou on such of his people who, accidentally or wilfully, broke the holes whilst collecting the young ooi. The killing of an old bird was considered a still more serious offence.

Before concluding my notes on the birds I will give a list of such introduced species as have come under my notice:—

BIRDS INTRODUCED BY EUROPEAN SETTLERS.

Sparrow: Breeds on the lighthouse island.

Goldfinch: Gradually-increasing numbers visit yearly in June. This year (1888) I saw a dozen which remained for three weeks.

Yellowhammer: Visits occasionally in small flocks.

Skylark: One or two pairs remain at the island.

Quail (Australian): One or two visit occasionally.